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ABSTRACT

In 1971 a survey was conducted by the Dearborn Schools to determine the curricular changes necessary to improve the electronic data processing (EDP) courses in the high schools and community colleges. Input was obtained from a 9 point questionnaire sent to 275 local data processing facilities and a 12 point questionnaire sent to 394 former EDP students with returns of 34 and 32 percent respectively. The survey revealed that the employers strongly advocate more on-the-job training, less unit record equipment training, and greater emphasis on instruction relevant to computer systems. On the other hand, the former students reported that their EDP course work prepared them well for lower level positions such as key punch operators. The specific recommendations for the community college curricula improvement emphasized more system analysis and design, more on-the-job-training, and more language work. (MC)

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Evaluation of Electronic Data Processing Curricula in The Dearborn Public Schools

DIVISION OF INSTRUCTION
OFFICE OF VOCATIONAL EDUCATION
DEARBORN PUBLIC SCHOOLS
4824 LOIS AVENUE
DEARBORN, MICHIGAN 48126
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EVALUATION OF ELECTRONIC DATA PROCESSING CURRICULA

IN

THE DEARBORN PUBLIC SCHOOLS

1971

by

Clovis B. Ferguson
and
Franklin D. Ronan

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
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FORWARD

Evaluation is a vital part of the educational process. This is particularly true as it relates to instruction in data processing, a technology with a phenomenal rate of growth which necessitates constant vigilance and frequent evaluation on the part of educators to keep instruction meaningful and viable. Recognition of this need prompted members of the Dearborn Public Schools to conduct the study summarized in this report.

Appreciation is extended to the Dearborn Board of Education and Dr. Roy Cole, Superintendent of Schools, for their recognition and support of the study. Special appreciation is extended to members of the advisory committee for their direction and guidance in the design and conduct of the study. Members of the advisory committee included: William E. Garrett, Alex Lewis, Henry Lewis, Jane Lombard, Sharon Metropoulos, Laura Mycek, Peter O'Connor, and Robert Osborne. The project director and research associate also acknowlege the employers and students for their effort in completing and returning the questionnaires.

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CHAPTER I

BACKGROUND OF THE STUDY

Electronic data processing has become an integral part of American life. The services rendered by people employed in this very important occupation are evident in every important facet of our culture. Payrolls, utility bills, airline reservations, budgeting systems, automotive designs, and thousands of other tasks are performed by today's computer systems. The word "computer" is even familiar to children, thousands of whom are using the powerful device to learn subject-matter in school.

Purpose of the Study

Because electronic data processing has become so important in our society, members of the Dearborn Board of Education, Dearborn, Michigan, requested further development of the school system's high school and community college curricula in data processing. To help in this endeavor, surveys were conducted to obtain pertinent information from data processing managers and former data processing students:

-- Identifying the training needs of employers in the field of electronic data processing.

-- Obtaining information and opinions from students who previously attended courses in electronic data processing at the high school and community college levels in Dearborn.

The main objectives of the study were to determine:

-- The effectiveness of the data processing program as preceived by students.

-- The degree to which the program met the needs of graduates employed in data processing or related fields.

-- The degree of performance needed for entry employment in data processing.

-- The effectiveness of data processing training for those students employed or taking training in fields other than data processing.

-- The degree to which changes in our current program are needed; and the necessary steps to implement the changes to more effectively meet the employment needs of business and industry.

Importance of the Study

During the early twentieth century, curriculum development in public education was often the result of the diligent work of school administrators, curriculum specialists, teachers, and others who worked in similar positions. Today, most individuals responsible for developing curricula in schools believe that students and members of the community should also be involved in initiating and improving curricular programs. Through such involvement, educators are better informed regarding the needs of students and society; and, hopefully, instructional programs are more meaningful and useful to students.

Scope of the Study

The Dearborn Public Schools, Dearborn, Michigan, is a school district of approximately 32,000 students: 20,500 students in the K-12 curricular program; and 11,500 students at the community college level. The community is a suburb of Detroit, automotive capital of the world.

To identify the training needs of Detroit area employers in the field of electronic data processing, a questionnaire was sent to 275 data centers in the Detroit metropolitan area. The business, educational, and industrial establishments were identified from the 1971 membership directory of the Detroit Chapter of the Data Processing Management Association (DPMA).

To obtain information and opinions from former data processing students, a second questionnaire was sent to each student who attended a data processing course at either the high school or community college level in Dearborn.

Design of the Study

Two survey instruments were designed for the study. One questionnaire was sent to a sample of all data processing centers in the Detroit metropolitan area; the other questionnaire was disseminated to students at the high school and community college levels who had previously participated in one or more data processing courses in the Dearborn Public Schools. A copy of both instruments can be found in the Appendix of this report.

A letter was attached to each questionnaire to describe the

purpose of the study, as well as the importance of the survey instrument. Questionnaire "A" was sent to 275 managers of local data processing centers; questionnaire "B" was disseminated to 394 former students.

Each potential respondent received one survey instrument. No attempt was made to send a "reminder" or a second questionnaire to those who did not reply to the initial mailing. In the past, "second attempts" in similar studies rarely increased the number of respondents significantly.

All questionnaires were mailed during the month of January, 1971.

Limitations of the Study

Like most research, the study described in this report is not without limitations. For example, it was impossible to obtain a mailing list of all data processing centers in the Detroit metropolitan area; hence, the directory of the Detroit Chapter of the Data Processing Management Association (DPMA) was used. The DPMA directory is the most complete listing of data processing facilities now available in the Detroit area.

No attempt was made in the study to project the number of new data centers that are under construction -- or the number planned for future construction. Hence, the study includes only the current and five-year projection of existing data processing centers.

Because many former Dearborn students no longer reside where they did when they attended the Dearborn schools, several questionnaires were returned with the marking, "address unknown." Thus, contract was not established with all of Dearborn's former data processing students.

CHAPTER II

SURVEY OF LOCAL DATA PROCESSING FACILITIES

A copy of questionnaire "A" (see pages 47 through 53 in Appendix) was sent to all known data processing facilities in the Detroit metropolitan area to determine:

1. Types and amount of data processing hardware in use
2. Number and classification of data processing personnel employed
3. Place of initial training of data processing employees
4. Number of new employees hired during the previous 12-month period
5. Common weaknesses detected in new employees
6. Popularity of having programmers operate equipment to compile and/or test programs
7. Computer languages most commonly used
8. Weekly wage of new employees in data processing
9. Amount and type of training desirable in data processing curricula
10. Acceptable training and work experience in data processing curricula
11. Willingness of data processing managers to hire high school and/or community college data processing students on a part-time, on-the-job, cooperative basis

A total of 275 questionnaires were dispatched to local data centers, 105 or 34 per cent of which were completed and returned. All results represent the total number of responses, in full or in part, to each questionnaire. For analytical purposes, data was

categorized into six major areas, as shown in Table 1.

TABLE 1

ORGANIZATIONS USING DATA PROCESSING

Type of Organization	Questionnaires Returned
Distribution	10
Finance	9
Government Education Medical	18
Manufacturing	32
Services	20
Other (printing, research, etc.)	16
Total	105

Unit Record Equipment. The workhorse of data processing before today's modern computer systems was hardware known as unit record equipment; that is, the accounting machine, calculating punch, collator, interpreter, reproducer, sorter, etc. Many data processing centers still retain one or more pieces of such equipment to relieve the work-load of today's computer systems. Although surveys conducted during the last decade show that many data centers have phased into second and/or third generation computer systems, some small data centers still rely upon unit record equipment entirely.

Table 2 shows that the sorter, interpreter, and calculating punch are the pieces of unit record equipment which are most widely used in the Detroit metropolitan area today. More important, results of the survey indicate that the need for all pieces of unit record equipment is expected to decline during the next five years.

TABLE 2

UNIT RECORD EQUIPMENT IN THE DETROIT METROPOLITAN AREA*

Type of Organization	Accounting Machine		Calculating Punch		Collator		Interpreter		Reproducer		Sorter		Other	
	P	A	P	A	P	A	P	A	P	A	P	A	P	A
Distribution	0	0	0	0	25	25	59	59	38	37	72	37	114	105
Finance	21	19	1	1	7	4	6	3	6	3	7	4	3	0
Government, Education, Medical	3	1	0	0	11	7	10	9	7	4	18	15	7	6
Manufacturing	2	0	0	0	19	12	23	15	17	15	44	30	13	10
Services	2	0	104	80	10	7	12	8	6	3	20	24	1	0
Other	1	1	1	0	8	5	5	3	5	3	9	7	1	1
Total	29	21	106	81	80	60	115	97	79	64	170	117	139	122

*Code: P = Present Number of Units
A = Anticipated Units, 1 - 5 years

Computer Equipment. Several national surveys have been conducted to assess the amount and type of computer hardware now in use.

In addition to identifying local equipment, the data summarized in this report also includes projected or anticipated needs. Identification of such data is vital to the development of a realistic data processing curriculum in public and private schools.

As shown in Table 3, it is anticipated that fewer but more powerful computer systems will be housed in existing data centers. A strong movement appears to be developing toward on-line communication systems, as indicated by the expected growth in the number of computer terminals within the next five years -- an increase from 321 to 666 terminal devices.

Nevertheless, it should be noted that the survey was not designed to identify or project the number of new data centers which might be built during the next several years; nor the type or amount of computer equipment which might be installed in the new centers.

TABLE 3

COMPUTER EQUIPMENT*

Type of Organization	Central Processing Unit		Magnetic Tape Drive		Disk Drive		Drum Storage		Data Cell		Papertape Reader-Punch		Card Reader		Card Punch		Printer		Optical Scanner Peader (OSR)		Optical (OCR) Character Reader		Terminal Device		Other	
	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A
Distribution	80	79	84	39	75	77	0	0	0	0	2	3	65	61	27	27	79	85	34	34	0	0	114	177	0	0
Finance	13	11	53	46	33	44	0	0	4	1	2	2	9	7	7	6	16	13	0	0	7	7	54	57	6	3
Government, Education, Medical	19	17	39	48	45	58	0	0	1	0	0	0	20	18	31	30	19	20	0	0	0	0	68	278	0	0
Manufacturing	49	35	124	104	84	84	2	5	0	0	8	8	70	36	35	19	43	58	0	0	0	0	33	79	4	2
Service	30	17	92	40	53	60	0	0	0	0	7	10	22	15	45	43	29	20	1	0	0	0	34	55	2	0
Other	8	7	17	19	17	17	0	0	0	0	2	1	9	7	6	3	8	5	0	0	0	0	18	20	1	0
Total	199	166	409	296	307	340	2	5	5	1	21	24	195	144	151	128	194	201	35	34	7	7	321	666	13	5

*Code: P = Present Number of Units
A = Anticipated Units, 1 - 5 years

Personnel. Often misunderstood or overlooked by people outside the field of data processing is the fact that it often requires more personnel to perform systems analysis, systems design, and programming, than it takes to physically operate the equipment. Too often this important fact is overlooked, or not fully understood. Table 4 depicts this condition. Respondents indicated that approximately 30 per cent more people are employed as systems analysts, analyst/programmers, and programmers, than as computer operators and tabulator equipment operators.

TABLE 4

PERSONNEL

Type of Organization	Systems Analysts	Programmers/ Analysts	Programmers	Computer Operators	Tab Operators	Key Punch Operators	Verifier Operators	Control Clerks	Other	
Distribution	31	151	56	138	152	214	14	0	129	16
Finance	26	44	31	63	6	69	28	7	65	28
Government, Education, Medical	14	8	21	24	11	34	16	0	24	4
Manufacturing	56	105	74	191	25	148	34	17	45	22
Service	148	247	38	90	20	255	201	13	65	276
Other	15	21	7	17	2	27	2	0	8	0
Total	290	576	227	523	216	747	295	37	336	346

Where did your employees receive their initial training? Considering the rapid growth of electronic data processing and subsequent manpower needs, it is advantageous from an educational standpoint to determine where those currently employed in the industry received their training. Table 5 shows that the four most prominent training sources are: on the job (70), schools sponsored by manufacturers of equipment (51), private business schools (45), and post high schools (colleges or technical schools) (38). While the number of employees trained in high school numbered only 10, it is significant that the combination of high school and post high school institutions trained 48 employees, ranking third among training services.

TABLE 5

WHERE DID YOUR EMPLOYEES RECEIVE THEIR INITIAL TRAINING?

Type of Organization	High School	On the Job	Private Business School	Manufacturer Sponsored School	Post High School (College or Tech. School)	Other (Military Service)
Distribution	3	4	4	4	5	2
Finance	0	6	4	3	1	0
Government, Education, Medical	0	14	12	13	8	1
Manufacturing	4	25	12	18	15	1
Service	3	15	6	10	7	1
Other	0	6	7	3	2	2
Total	10	70	45	51	38	7

How many new employees have you hired in your data processing department during the past 12 months? Awareness of the availability of occupational opportunities is a very necessary part of training, particularly in vocational-technical education. Since the inflationary trend in the economy of the United States has continued during the recent 12-month period -- and since the number of unemployed has increased substantially during the same period of time -- the employment data received via the questionnaire cannot be considered typical. Nevertheless, those who replied to the survey indicated that a total of 542 new employees were hired in data processing within the past twelve months. However, the new employees were not all additions to staff; many were replacements. As cited in Table 6, the greatest number of new personnel is in service organizations (285); finance ranks second (79); and manufacturing is third (61).

TABLE 6

HOW MANY NEW EMPLOYEES HAVE YOU HIRED IN YOUR DATA PROCESSING DEPARTMENT DURING THE PAST 12 MONTHS?

Type of Organization	Number of Employees Hired in D.P. in Past 12 Months
Distribution	52
Finance	79
Government, Education, Medical	37
Manufacturing	61
Service	285
Other	28
Total	542

What weaknesses are most frequently detected in your new employees? Continued improvement of high school and college instruction in data processing necessitates curriculum development which is based upon the observation and need of employers. Hence, training weaknesses must be identified so that instructional programs can be improved accordingly. The data summarized in Table 7 illustrates the need for instructional programs to include practical experience as well as extensive development of technical skills in data processing.

TABLE 7

WHAT WEAKNESSES ARE MOST FREQUENTLY DETECTED IN YOUR NEW EMPLOYEES?

Type of Organization	Practical Experience	Ability to follow instructions	Communication Skills	Good Work Habits	Lack of Technical Skills	Positive Attitude Toward Work	Initiative for Self Improvement	Well defined Course Objectives
Distribution	5	1	1	2	6	2	0	0
Finance	1	0	1	2	1	4	2	1
Government, Education, Medical	4	2	3	2	7	1	2	1
Manufacturing	10	4	4	6	8	3	0	4
Service	10	7	4	2	6	8	4	3
Other	4	4	0	1	3	2	2	0
Total	34	18	13	15	31	20	10	9

Do your programmers personally operate the equipment to compile and/or test their programs? To a degree, training objectives should reflect practices in the occupational field of data processing. As shown in Table 8, respondents indicated that the majority of programmers personally operate hardware to compile and/or test programs; 59 answered "yes;" 27 replied "no." Nevertheless, it is common knowledge that this practice depends, to a large extent, upon the method of production, size of staff, security measures, and type of operating system which is being utilized.

TABLE 8

DO YOUR PROGRAMMERS PERSONALLY OPERATE THE EQUIPMENT TO COMPILE AND/OR TEST THEIR PROGRAMS?

Type of Organization	Yes	No
Distribution	2	4
Finance	4	3
Government, Education, Medical	11	5
Manufacturing	22	9
Service	13	5
Other	7	1
Total	59	27

What are the computer languages that you are using? The exact number of computer languages utilized in data processing today can only be a guess. Accordingly, to teach all or most of the languages is impossible. The best that can be accomplished by educational institutions is to teach the most prominent languages -- or the ones in greatest demand.

As summarized in Table 9, those who replied to the survey indicated that COBOL, BAL, RPG, ForTran, and Autocoder are the most popular languages.

TABLE 9

WHAT ARE THE COMPUTER LANGUAGES THAT YOU ARE USING?

Type of Organization	Autocoder	BAL	BASIC	COBOL	Easycoder	ForTran	NEAT/3	PL/1	RPG	SPS	Other
Distribution	2	5	2	5	2	2	0	0	5	1	3
Finance	3	5	0	5	0	0	1	0	2	0	2
Government, Education, Medical	4	4	1	8	1	8	0	0	5	1	3
Manufacturing	8	21	3	17	6	10	0	1	16	6	2
Service	6	9	5	13	2	6	1	3	9	0	6
Other	3	4	2	5	0	1	0	0	5	0	3
Total	26	48	13	53	11	27	2	4	42	8	19

What is the approximate beginning salary of your data processing employees? New employees in data processing earn an income equal or greater than most other areas of technical employment. As shown in Table 10, systems analysts, analyst/programmers, and programmers receive the highest beginning salaries; control clerks, keypunch operators, and verifier operators receive the lowest pay. Thus, positions which require extensive training and responsibility result in the highest income; for example, systems analysts in service organizations earn the highest beginning salary per week ($245).

TABLE 10

WHAT IS THE APPROXIMATE WEEKLY SALARY

OF YOUR NEW EMPLOYEES IN DATA PROCESSING?

Type of Organization	Systems Analysts	Analyst/ Programmer	Programmer	Computer Operator	TAB Operator	Key Punch Operator	Verifier Operator	Key Tape Operator	Control Clerk	Other
Distribution	$218	$202	$170	$153	$125	$115	$102	-o-	$119	-o-
Finance	$175	$170	$132	$102	$102	$ 95	$102	$ 80	$105	-o-
Government, Education, Medical	$240	$216	$180	$140	$130	$112	$116	$112	$125	$163
Manufacturing	$225	$210	$210	$162	$150	$120	$115	$125	$150	$185
Service	$245	$215	$190	$160	$130	$120	$110	$135	$120	$100
Other	$240	$215	$165	$145	$112	$110	$ 85	$ 80	$123	-o-
Average	$224	$205	$174	$144	$125	$112	$105	$106	$124	$149

What type of data processing training should be emphasized in high school and college? Much has been written and said concerning the need for occupational programs in data processing which emphasize third generation computer systems rather than unit record equipment. Results of this survey strongly support this contention. Respondents endorsed the "heavy" desire to employ personnel who have been schooled in systems design, programming, magnetic disk systems, and computer operations, as summarized in Table 11. In contrast, few respondents indicated a need to employ personnel who possess extensive training which includes the accounting machine, calculating punch, collator, and reproducer.

TABLE 11

WHAT TYPE OF DATA PROCESSING TRAINING SHOULD BE EMPHASIZED IN HIGH SCHOOL AND COLLEGE?*

Type of Organization	Keypunch			Verifier			Accounting Machine			Calculating Punch			Collator			Interpreter			Reproducer			Sorter			Panel Wiring		
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
Distribution	3	3	2	2	4	3	6	1	0	7	0	0	7	1	0	7	1	0	8	0	0	7	1	0	7	0	0
Finance	1	2	4	3	3	0	5	1	0	5	1	0	5	2	0	6	1	0	5	2	0	3	3	1	4	0	0
Government, Education, Medical	4	8	5	2	7	3	8	5	0	10	1	0	11	4	1	11	2	2	11	4	1	9	6	2	10	5	1
Manufacturing	12	6	10	11	7	7	18	3	0	18	3	0	18	6	0	18	5	0	19	5	0	15	8	3	16	6	1
Service	7	7	5	7	6	4	13	2	2	15	0	2	13	2	2	16	1	0	14	2	1	11	4	2	13	1	3
Other	3	3	2	3	3	1	4	2	0	5	0	0	5	2	0	6	0	0	5	2	0	6	1	0	4	1	1
Total	30	29	28	28	30	18	54	14	2	60	5	2	59	17	3	64	10	2	62	15	2	51	23	8	54	13	6

*Code: L = Light
M = Medium
H = Heavy

TABLE 11 (continued)

WHAT TYPE OF DATA PROCESSING TRAINING SHOULD BE EMPHASIZED IN HIGH SCHOOL AND COLLEGE?*

Type of Organization	Card Handling			Flowcharting			Procedure Planning			OJT Co-op Training			Card System			Tape System			Magnetic Drum System			Magnetic Disk System		
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
Distribution	5	2	1	2	4	3	1	5	3	0	3	5	5	3	1	1	6	2	2	5	0	2	3	4
Finance	3	0	3	2	1	3	0	1	5	0	5	2	4	3	0	1	3	3	2	0	0	3	0	3
Government, Education, Medical	5	2	5	0	11	6	1	6	10	1	4	11	2	10	4	2	5	10	9	5	1	1	4	12
Manufacturing	10	9	4	0	16	12	2	2	16	2	2	13	7	16	5	1	9	15	11	9	5	0	7	21
Service	10	5	3	1	7	10	1	4	11	1	4	11	5	7	5	3	7	7	8	7	0	2	5	9
Other	4	2	0	0	4	4	0	3	5	0	4	1	2	1	3	0	2	4	2	1	1	0	2	5
Total	37	20	16	5	43	38	5	21	50	4	22	43	25	40	18	8	32	41	34	27	7	8	21	54

*Code: L = Light
M = Medium
H = Heavy

TABLE 11 (continued)

WHAT TYPE OF DATA PROCESSING TRAINING SHOULD BE EMPHASIZED IN HIGH SCHOOL AND COLLEGE?*

Type of Organization	Computer Operator			Programming			Systems Design			Block Diagramming			Data Flow in Computer			COBOL			ForTran			Assembler (Autocoder, Easycoder, SPS, etc.)			Operating Systems and Job Control Language (JCL)		
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
Distribution	2	1	6	1	1	7	0	2	7	0	3	6	2	3	3	1	2	6	3	4	1	2	2	4	2	1	6
Finance	0	1	5	1	2	4	2	1	4	2	0	3	2	1	2	0	1	5	3	1	0	3	1	2	3	1	2
Government, Education, Medical	2	5	9	4	8	8	2	5	9	1	7	8	2	8	6	0	5	13	3	3	4	4	8	4	5	7	5
Manufacturing	1	12	16	0	5	24	0	6	23	0	12	17	4	12	10	4	6	19	8	12	6	4	9	11	2	9	11
Service	1	4	11	2	1	15	0	0	17	2	6	9	5	5	7	1	5	12	8	7	3	4	7	5	1	5	10
Other	3	1	3	0	0	7	1	1	5	0	2	5	0	2	3	1	3	3	2	2	1	1	4	1	2	0	3
Total	9	24	50	8	17	65	5	15	65	5	30	48	15	31	31	7	22	58	27	29	15	18	31	27	15	23	37

*Code: L = Light
M = Medium
H = Heavy

Who do you think would make the best prospective data processing employees? Respondents indicated an overwhelming belief that the best prospective personnel in data processing are those who have a minimum 1½ years of formal data processing training plus ½ year of on-the-job training. Table 12 shows that only 10 respondents believe that the best prospective employees are those who have had a minimum of two years of experience with little or no formal training in data processing. Surprisingly, one respondent indicated that the best prospective employees are people who have had no training or experience in electronic data processing.

TABLE 12

WHO WOULD MAKE THE BEST PROSPECTIVE DATA PROCESSING EMPLOYEE?

Type of Organization	A Minimum of Two Years Experience with Little or No Formal D.P. Training	A Minimum of 1½ Years of Formal D.P. Training Plus ½ year On-the-job Training	No Training or Experience in D.P. Field
Distribution	1	8	0
Finance	1	6	0
Government, Education, Medical	3	15	0
Manufacturing	2	28	0
Service	3	15	1
Other	0	8	0
Total	10	80	1

Would you be interested in hiring carefully selected, potential graduates, with our recommendation, on a part-time, on-the-job/cooperative basis, provided that they have satisfactorily completed or are near completing our data processing curriculum? Students who have had on-the-job training in data processing often find satisfactory employment more readily than students who have not had such experience. Table 13 indicates the willingness of employers to hire students on a part-time basis who are studying data processing at the community college level. Of the 76 respondents, 50 replied affirmatively. In contrast, only 30 of the employers expressed a desire to hire high school students on a part-time basis who were studying data processing.

TABLE 13

WOULD YOU BE INTERESTED IN HIRING CAREFULLY SELECTED, POTENTIAL GRADUATES, WITH OUR RECOMMENDATION, ON A PART-TIME, ON-THE-JOB/COOPERATIVE BASIS PROVIDED THAT THEY HAVE SATISFACTORILY COMPLETED OR ARE NEAR COMPLETING OUR DATA PROCESSING CURRICULUM?

Type of Organization	High School		Community College	
	Yes	No	Yes	No
Distribution	4	4	5	2
Finance	1	5	2	4
Government, Education, Medical	6	9	12	6
Manufacturing	5	15	16	6
Service	11	7	12	4
Other	3	6	3	4
Total	30	46	50	26

Chapter II Summary

UNIT RECORD EQUIPMENT

-- There will be a general decline in the number of pieces of unit record equipment during the next five years.

COMPUTER EQUIPMENT

-- Although there will be a substantial increase in the memory size of current computers during the next five years, there will be a decrease in the number of central processing units in existing data centers.

-- There will be a sizeable increase in the number of operational terminal devices during the next five years.

DATA PROCESSING PERSONNEL

-- More personnel are employed in data centers as systems analysts, analyst/programmers, and programmers than as computer operators and tabulator operators.

OTHER

-- The greatest number of data processing employees are trained on-the-job and in vendor sponsored schools.

-- Service organizations employed the greatest number of new employees in data processing during the past year.

-- Data processing curricula should include practical experience as well as extensive development of technical skills.

-- The majority of computer programmers personally operate a computer system to compile and/or test their programs.
-- COBOL, RPG, BAL, and ForTran are the most popular computer languages currently used.
-- There is a wide range in the beginning salary of data processing employees.
-- There is a strong desire by employers for only a light amount of student training in unit record equipment; with greater emphasis directed toward instruction relevant to computer systems.
-- Employers strongly advocate a combination of formal and on-the-job training for students in data processing.
-- Employers are moderately willing to hire high school students on a on-the-job, cooperative training basis.
-- Employers are generally willing to hire community college students on an on-the-job cooperative training basis.

CHAPTER III

SURVEY OF FORMER DATA PROCESSING STUDENTS

In the past, curriculum development in public education often took place without information or advise from students. Rather than ignore such important opinion in this study, former data processing students at the high school and community college levels in the Dearborn Schools were surveyed to identify:

1. Academic average
2. College, university, or other schools attended since high school, including area of specialization
3. Current enrollment in school
4. Current employment status
5. Preparation for first full-time job
6. Value of data processing training
7. Interest in additional training in data processing, including type of interest
8. Method of obtaining current employement
9. Courses in data processing which have helped the most in current employment
10. Opinion regarding technical preparation in data processing
11. Opinion regarding additional data processing courses

A total of 394 questionnaires were sent to all former data processing students of the Dearborn Public Schools; 126 or 32 per cent

of the questionnaires were completed and returned. All results represent the total number of responses, in full or in part, to each questionnaire. Table 14 shows that five of the respondents who studied data processing in the Dearborn Public Schools maintained an "A" or "excellent" average in their overall course work; that 119 former students obtained "average" and "above average" marks; and that only one former student possessed a "D" or "below average" rating.

TABLE 14

WHAT WAS (IS) YOUR ACADEMIC AVERAGE?

Academic Average	High School*				Community College**				
	E.D.P.		Non-E.D.P.		E.D.P.		Non-E.D.P.		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
A	0	1	3	0	0	0	1	0	5
B	1	5	12	22	6	6	4	11	67
C	1	1	9	18	5	3	9	7	53
D	0	0	0	0	0	0	1	0	1
Total	2	7	24	40	11	9	15	18	126

*Code: High School
-- E.D.P. = Students who elected data processing course-work and majored in Business Education.
-- Non-E.D.P. = Students who elected data processing course-work but majored in a field other than Business Education.

**Code: Community College
-- E.D.P. = Students who majored in Computer Science.
-- Non-E.D.P. = Students who elected data processing course-work but majored in a field other than Computer Science.

What Colleges, Universities, or Other Schools Have You Attended Since High School? Even though more young adults are attending institutions of higher education today than in the past, approximately 60 per cent nationally still terminate their formal education after high school graduation. Although the percentage of Dearborn youth not attending institutions of higher learning is "just" 40 per cent, Table 15 shows that only 24 per cent of the former data processing students terminated their formal education at grade 12. Accordingly, 30 of the 126 respondents indicated that they did not participate in any formal education after high school graduation.

TABLE 15

WHAT COLLEGES, UNIVERSITIES, OR OTHER SCHOOLS HAVE YOU ATTENDED SINCE HIGH SCHOOL?

School Attended	High School*				Community College**				
	E.D.P.		Non-E.D.P.		E.D.P.		Non-E.D.P.		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
None	1	3	4	22	0	0	0	0	30
Community College	0	1	1	5	11	8	15	18	59
Four Year College or University	1	0	19	10	0	0	0	0	30
Armed Forces	0	0	1	0	0	0	0	0	1
Other	0	3	0	3	0	0	0	0	6
Total	2	7	25	40	11	8	15	18	126

*/**Code: See page 26.

Are You Now Enrolled in School? Similar to most occupations, data processing necessitates advanced training beyond the high school and/or community college levels. Hence, it is no surprise that 95 of the 126 respondents indicated that they were enrolled in school at the time they completed the questionnaire. Furthermore, Table 16 shows that all respondents who formerly elected data processing at the community college level were taking additional coursework at the time of the survey.

TABLE 16

ARE YOU NOW ENROLLED IN SCHOOL?

Enrolled In School?	High School*				Community College**				
	E.D.P.		Non-E.D.P.		E.D.P.		Non-E.D.P.		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
Yes	2	1	23	17	11	8	15	18	95
No	0	6	2	23	0	0	0	0	31
Total	2	7	25	40	11	8	15	18	126

*/** Code: See page 26.

Are You Currently Employed and Attending School? Attendance in school while gainfully employed is a common practice today. Of the 126 former Dearborn students who responded to the survey, 10 were working full-time and 44 were employed part-time. As noted in Table 17, 72 of the respondents were not employed at the time of the survey.

TABLE 17

ARE YOU CURRENTLY EMPLOYED AND ATTENDING SCHOOL?

Work-School Relationship	High School*				Community College**				
	E.D.P.		Non-E.D.P.		E.D.P.		Non-E.D.P.		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
Working-Part-time	0	2	7	5	6	5	6	13	44
Working-Full-time	0	1	1	8	0	0	0	0	10
Not Working	2	4	17	27	5	3	9	5	72
Total	2	7	25	40	11	8	15	18	126

*/** Code: See page 26.

In Regard to Your Data Processing Coursework, How Well Were You Prepared for Your First Job? Obtaining adequate training for a career or occupation is vital to most people. Since high school and community college coursework is often the source of such preparation, it is important that corresponding curricula are designed and improved to meet occupational needs. Of the 64 former students who replied to the item, 50 indicated that they were well prepared or satisfactorily prepared. As cited in Table 18, only 14 respondents indicated that they were inadequately prepared.

TABLE 18

IN REGARD TO YOUR DATA PROCESSING COURSEWORK,
HOW WELL WERE YOU PREPARED FOR YOUR FIRST JOB?

How Well Prepared for First Job	High School*				Community College**				
	E.D.P.		Non-E.D.P.		E.D.P.		Non-E.D.P.		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
Inadequately Prepared	0	0	3	3	0	0	3	5	14
Satis-factorily Prepared	1	3	5	18	2	3	2	2	36
Well Prepared	0	3	1	2	3	1	1	3	14
Total	1	6	9	23	5	4	6	10	64

*/** Code: See page 26.

If You are Working in an Occupation Other Than Electronic Data Processing, What is the Value of Your Former Data Processing Coursework in Your Employment? Much has been written regarding the value of electronic data processing knowledge even though a person is employed in another occupation. Eight of the 88 respondents indicated that their training in electronic data processing has been of great value in their current occupation; 38 others replied that the training has been of "some value." Table 19 shows that 42 respondents, or less than 50 per cent, considered their data processing coursework of no value in their current occupation.

TABLE 19

IF YOU ARE WORKING IN AN OCCUPATION OTHER THAN ELECTRONIC DATA PROCESSING, WHAT IS THE VALUE OF YOUR FORMER DATA PROCESSING COURSEWORK IN YOUR EMPLOYMENT?

Former Data Processing Coursework	High School*				Community College**				
	E.D.P.		Non-E.D.P.		E.D.P.		Non-E.D.P.		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
No Value	0	0	6	18	1	3	5	9	42
Some Value	0	1	9	13	2	2	6	5	38
Great Value	0	2	1	2	1	1	0	1	8
Total	0	3	16	33	4	6	11	15	88

*/** Code: See page 26.

Are You Interested in Taking Additional Coursework in Electronic Data Processing? If "Yes," What Kind of Program Would be Most Appealing to You? As cited in Table 20, 74 of the 124 former students who responded to the questionnaire indicated that they would be interested in taking additional coursework in electronic data processing. Fifty respondents, or 40 per cent, replied "no."

TABLE 20

ARE YOU INTERESTED IN TAKING ADDITIONAL COURSEWORK IN ELECTRONIC DATA PROCESSING?

Interest In Additional Training	High School*				Community College**				
	E.D.P.		Non-E.D.P.		E.D.P.		Non-E.D.P.		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
Yes	1	5	15	19	9	8	8	9	74
No	1	2	10	19	2	0	7	9	50
Total	2	7	25	38	11	8	15	18	124

*/** Code: See page 26.

Of those former students who indicated that they would be interested in taking additional coursework in data processing, 26 desired an "adult education" program; 21 preferred "in-service training;" and 27 indicated "other" as their choice. Table 21 summarizes the results.

TABLE 21

ARE YOU INTERESTED IN TAKING ADDITIONAL COURSEWORK IN ELECTRONIC DATA PROCESSING?

IF YES, WHAT KIND OF PROGRAM WOULD BE MOST APPEALING TO YOU?

Type of Coursework	High School*				Community College**				
	E.D.P.		Non-E.D.P.		E.D.P.		Non-E.D.P.		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
Adult Training	1	2	5	11	2	3	1	1	26
In-Service Training	0	0	5	5	1	4	3	3	21
Other	0	3	6	5	5	1	3	4	27
Total	1	5	16	21	8	8	7	8	74

*/** Code: See page 26.

How Did You Secure Your Present Job? Few school districts or educational institutions can financially afford extensive employment programs to help students obtain jobs after completion of high school or community college coursework. It is commonly believed that most people obtain employment through their own effort rather than through agencies, friends, parents, etc. Table 22 verifies this belief. Forty-four of the 86 respondents obtained their job personally. Nevertheless, nine of the respondents, or almost 10 per cent, obtained employment through one of their former schools.

TABLE 22

HOW DID YOU SECURE YOUR PRESENT JOB?

Method of Securing Your Present Job	High School*				Community College**				
	E.D.P.		Non-E.D.P.		E.D.P.		Non-E.D.P.		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
Own Effort	0	5	8	15	0	1	8	7	44
Parents or Relatives	0	0	1	3	2	1	1	4	12
Friends	0	0	3	6	0	2	0	3	14
School Placement	0	2	2	3	2	0	0	0	9
Private Employment Agency	0	0	0	4	0	0	0	0	4
Other	0	0	1	1	1	0	0	0	3
Total	0	7	15	32	5	4	9	14	86

*/** Code: See page 26.

What Data Processing Coursework has the Greatest Value in Your Present Job? In the past, curricula in data processing as well as other areas of study were based upon the anticipated needs of students. Such needs were often identified without considering student opinion; thus the needs were sometimes inaccurate or misinterpreted. To accurately obtain student opinion and avoid guesswork, respondents were asked to identify former data processing coursework they have found most valuable in their current employment. Accordingly, former high school students identified training in keypunch and unit record equipment as most valuable to them, while former community college students cited coursework in unit record equipment and computer programming as greatest in value.

How Well Do You Feel You Were Prepared in Data Processing Through Your Coursework? Although many courses in school rate excellent when considered as-a-whole, individual lessons and units in a course often need improvement. To identify specific strengths and weaknesses within the existing high school and community college curricula in Dearborn, former students were asked to express their opinion regarding the major content areas in data processing. As summarized in Table 23, the vast majority of former data processing students at the high school level indicated that they were either "well prepared" or "satisfactorily prepared" in all areas of their coursework. Although most former community college students also indicated strong satisfaction with their former coursework in data processing, several respondents reported "no training" because they did not elect all available courses.

TABLE 23

HOW WELL WERE YOU PREPARED IN ELECTRONIC DATA PROCESSING THROUGH YOUR COURSEWORK?

(High School)

High School Coursework	Well Prepared	Satis-factorily Prepared	Unsatis-factorily Prepared	No Training	Total
Accounting Machine	14	33	9	15	71
Collator	14	33	20	1	68
Interpreter	13	31	13	13	70
Reproducer	26	29	11	2	68
Sorter	42	27	6	0	75
Key Punch	38	28	6	0	72
Diagramming	26	31	8	6	71
Wiring Panels	27	32	10	2	71
Fundamentals of Data Processing	31	32	6	1	70
Total	231	276	89	40	636

TABLE 23 (continued)

HOW WELL WERE YOU PREPARED IN ELECTRONIC DATA PROCESSING THROUGH YOUR COURSEWORK?

(Community College)

Community College Coursework	Well Prepared	Satis-factorily Prepared	Unsatis-factorily Prepared	No Training	Total
Accounting Machine	7	5	0	14	26
Collator	7	7	1	11	26
Interpreter	4	6	2	14	26
Reproducer	8	7	1	11	27
Sorter	10	5	0	11	26
Key Punch	10	4	1	11	26
Flow Charting	5	6	2	12	25
Computer Fundamentals	8	4	1	13	26
Computer Operations	5	4	2	15	26
Programming	6	6	1	13	26
Systems Analyst and Design	1	2	2	11	16
Total	71	56	13	136	276

Do You Feel More Data Processing Courses Should Be Made Available in Our Schools? If "Yes," Please Specify Those Courses That You Believe Would Be Most Needed. In an occupation which is expanding and changing as rapidly as electronic data processing, it is possible that existing curricula in schools are not broad enough to meet current demands. The survey results summarized in Table 24 support this contention. Ninety-three of the 111 respondents answered affirmatively regarding the need for additional courses in school.

TABLE 24

DO YOU FEEL MORE DATA PROCESSING COURSES SHOULD BE MADE AVAILABLE IN OUR SCHOOLS?

More Data Processing Courses in our Schools?	High School*				Community College**				
	E.D.P.		Non-E.D.P.		E.D.P.		Non-E.D.P.		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
Yes	2	7	16	32	9	7	8	12	93
No	0	0	6	5	2	0	3	2	18
Total	2	7	22	37	11	7	11	14	111

*/** Code: See page 26.

When asked to recommend the specific data processing courses which are most needed at the high school and community college levels, respondents identified the following in rank order:

High School

1. Computer Operations
2. Computer Programming
3. Key Punch

Community College

1. Computer Operations
2. Computer Programming
3. System Analysis and Design
4. Occupational Information

Please Include Any Remarks That You Feel Would Help to Make Data Processing Instruction More Beneficial to Students. To supplement information obtained earlier in the questionnaire, respondents were encouraged to add any comments which they thought might be helpful in further developing data processing curricula. Accordingly, those respondents who studied electronic data processing in high school expressed a strong need for more time in the classroom; former community college students indicated a need for more "hands-on" experience with a computer terminal and other equipment. Respondents identified the following needs in rank order:

High School

1. Additional time in the classroom (2-hour time allocations)
2. More up-to-date equipment

3. More on-the-job training
4. Additional in-service training for teachers
5. Advanced classes limted only to interested students

Community College

1. More "hands-on" experience with a computer terminal and equipment
2. Opportunity to transfer course credit to other institutions
3. Additional time needed in the classroom
4. More field trips

Chapter III Summary

-- Ninety-nine per cent of the students who elected data processing courses obtained "average," "above average," or "excellent" marks.

-- Seventy-six per cent of the students who elected data processing courses in high school later attended a university, a four-year college, or a community college.

-- Seventy-five per cent of the respondents were attending school during the time of the survey.

-- Forty-two per cent of the respondents were either fully employed or partially employed while attending school.

-- In regard to data processing coursework, seventy-eight per cent of the former students indicated that they were either "well prepared" or "satisfactorily prepared" for their first job.

-- Fifty-one per cent of the respondents who were employed in an occupation other than electronic data processing believed that their former data processing coursework had either "great value" or "some value."

-- Fifty-nine per cent of those responding to the questionnaire said they were interested in taking additional coursework in electronic data processing: 26 through adult education; 21 via in-service training; and 27 through "some other" means.

-- Fifty-three per cent of the respondents obtained their current job through their own effort.

-- Former students who elected data processing in high school identified coursework in key punch and unit record equipment as most valuable in their current employment.

-- Former students who elected data processing courses at the community college level cited training in unit record equipment and computer programming as most valuable in their current employment.

-- The vast majority of former data processing students at the high school level indicated that they were either "well prepared" or "satisfactorily prepared" in all areas of their coursework.

-- Most former data processing students at the community college level indicated that they were either "well prepared" or "satisfactorily" prepared in the content areas of the courses they elected.

-- Eighty-three per cent of the respondents believed that more data processing courses should be made available in schools, especially in computer operations and programming.

-- Former data processing students at the high school level indentified "more time needed in the classroom" and "more up-to-date equipment" as their main recommendations to help make instruction more benefical to students.

-- Former data processing students at the community college level cited "more hands-on-experience with a computer terminal and other equipment" and "opportunity to transfer course credit to other educational institutions" as their main suggestions to help make instruction more beneficial to students.

CHAPTER IV

CURRICULAR RECOMMENDATIONS

For occupational education to remain viable and provide meaningful experiences for students, educators must continuously evaluate and develop instructional programs according to (1) student needs and interests, and (2) manpower needs in business and industry. To accomplish this goal in the field of electronic data processing, it is recommended that the Dearborn Public Schools establish a curriculum committee composed of secondary and post secondary personnel in data processing to evaluate existing coursework, develop curricula, and provide articulation in data processing instruction.

Henry Ford Community College

The data summarized in chapters two and three of this report provide considerable information for further development of the data processing curricula at Henry Ford Community College. Results of the two surveys indicate a strong movement toward more sophisticated computers with increased usage of terminal devices and less use of unit record equipment. This movement will likely generate a greater demand for computer software, resulting in a greater need for systems analysts and programmers who are familiar and knowledgeable with various operating systems. Results further indicate strong support for both formal and on-the-job training of students who aspire toward employment positions in electronic data processing.

Specific Recommendations

-- Coursework involving unit record equipment should not be expanded beyond the existing one-semester course.

-- A computer system with disk and magnetic tape peripheral equipment should be installed which would replace the current remote-batch terminal.

-- Curricula involving data communications should be developed and offered as a part of the computer science program.

-- Conversational terminals (i.e. ASR-33, ASR-35, or CRT) should be installed to provide students with "hands-on" experience in data communications.

-- Current coursework in systems analysis and design should be further developed and expanded.

-- Students should personally compile and/or test most of the programs which they write.

-- Coursework in BAL, RPG, and other computer languages should be considered when further developing coursework in programming languages.

-- A course in computer operations should be developed for those students who prefer to become computer operators rather than computer programmers.

-- On-the-job training should be included as a part of the computer science curricula.

-- Advanced placement should be granted to students who

have successfully completed high school coursework in data processing.

-- Granting "transfer credit" to students who satisfactorily complete data processing courses should be examined to determine whether the practice is feasible.

High School

Although conclusions described in Chapter Three, "Survey of Former Data Processing Students in Dearborn," indicated that high school students felt they were generally well prepared in data processing, the majority expressed the need for more data processing experiences in school which would include (1) expanded time allotments for classes, and (2) more "hands-on" exposure to up-to-date equipment. Former students also expressed the need to spend less instructional time working with unit record equipment.

Specific Recommendations

-- Coursework involving unit record equipment should not be expanded beyond the existing one-semester course.

-- In addition to the current course, Fundamentals of Computer Programming (COBOL), a second semester course in COBOL should be developed and offered.

-- Coursework in assembly language should be considered after expanding and further developing the existing COBOL course.

-- Provision should be made for classes to meet for longer periods of time.

-- The computer system in the Department of Educational Data Services should be utilized more extensively by students in data processing courses.

-- A course in computer operations should be developed for those students who prefer to become computer operators rather than computer programmers.

-- On-the-job training should be included as a part of the data processing curriculum in the senior year.

APPENDIX A

SURVEY OF LOCAL DATA PROCESSING FACILITIES

DEARBORN PUBLIC SCHOOLS
4824 Lois Avenue
Dearborn, Michigan 48126

SURVEY OF LOCAL DATA PROCESSING FACILITIES

This questionnaire was prepared for the purpose of acquiring information from data processing installations in an attempt to improve the data processing instructional programs in the Dearborn Public Schools (high school as well as community college).

To protect the privacy of opinions, company names will NOT be used in any of the summary statements. Answers will be kept confidential; only the statistics of the study will be reported.

Those who are interested in the results of this survey may indicate accordingly on the last page of the questionnaire.

Name of Person_____ Title_____

Installation _____

Address_____ Phone No._____ Ext._____

TYPE OF ORGANIZATION:

____Distribution	____Insurance	____Service
____Education	____Manufacturing	____Transportation
____Finance	____Research or Eng.	____Utilities
____Government	____Retail Trade	____Wholesale Trade
		____Other

EQUIPMENT: Unit Record

Present Number of Units	Model Description	Number Anticipated 1-2 yrs.hence	Number Anticipated 3-5 yrs.hence
____Accounting Machine	_____	_____	_____
____Calculating Punch	_____	_____	_____
____Collator	_____	_____	_____
____Interpreter	_____	_____	_____
____Reproducer	_____	_____	_____
____Sorter	_____	_____	_____
____Other	_____	_____	_____

EQUIPMENT: Computer

Present Number of Units	Model Description	Number Anticipated 1-2 yrs.hence	Number Anticipated 3-5 yrs.hence
____ Central Processing Unit			
____ Memory Size			
____ Magnetic Tape Drive			
____ Disk Drive			
____ Drum Storage			
____ Data Cell			
____ Papertape Reader-Punch			
____ Card Reader			
____ Card Punch			
____ Printer			
____ Optical Scanner Reader (OSR)			
____ Optical Character Reader (OCR)			
____ Terminal Device			
____ Other			

PERSONNEL: (Please indicate approximate numbers)

____ Systems Analysts

____ Programmers/Analysts

____ Programmers

____ Computer Operators

____ TAB Operators

____ Key Punch Operators

____ Verifier Operators

____ Key Tape Operators

____ Control Clerks

____ Other

1. Where did your employees receive their initial training?

____High School

____On the job

____Private Business Schools

____Schools Sponsored by Manufacturers of Equipment

____Post High Schools (College or Technical Schools)

____Other _____

_____

_____

2. How many <u>new</u> employees have you hired in your data processing department during the past 12 months?

_____

3. What weaknesses are most frequently detected in your new employees?

a. _____

b. _____

c. _____

d. _____

4. Do your programmers personally operate the equipment to compile and/or test their programs?

____Yes

____No

5. What are the computer languages that you are using?

____Autocoder ____Easycoder ____RPG

____BAL ____ForTran ____SPS

____BASIC ____NEAT/3 ____Other _____

____COBOL ____PL/1 _____

6. What is the approximate beginning salary of your data processing employees?

$____/week Systems Analyst	$____/week Verifier Operator
$____/week Analyst/Programmer	$____/week Key Tape Operator
$____/week Programmer	$____/week Control Clerk
$____/week Computer Operator	$____/week Other_____
$____/week TAB Operator	$____/week _____
$____/week Key Punch Operator	$____/week _____

7. What type of data processing training should be emphasized in high school and college?

Place an H for heavy, M for medium, or L for light before each of the items listed below. These notations should indicate the amount of training that you feel should be included in our data processing curricula.

____Key Punch	____Tape Systems
____Verifier	____Magnetic Drum System
____Accounting Machine	____Computer Operations
____Calculating Punch	____Programming
____Collator	____Systems Design
____Interpreter	____Block Diagramming
____Reproducer	____Data Flow in Computer
____Sorter	____COBOL
____Panel Wiring	____Fortran
____Card Handling	____Assembler (Autocoder, Easycoder, SPS, etc.)
____Flowcharting	
____Procedure Planning	____Operating Systems and Job Control Language (JCL)
____On-the-job Training/ Cooperative Training	____Other_____
____Card System	____ _____

8. Who do you think would make the best prospective data processing employees? (Please check one.)

____ 1. One who has a minimum of two years of experience with little or no formal data processing training.

____ 2. One who has a minimum of 1½ years of formal data processing training plus ½ year of on-the-job training.

____ 3. One who has no training or experience in the data processing field.

9. Would you be interested in hiring carefully selected potential graduates, with our recommendations, on a part-time on-the-job/ cooperative basis, provided that they have satisfactorily completed, or are near completing our data processing curriculum?

High School: ____Yes ____No

Community College: ____Yes ____No

Are you interested in receiving the results of this survey?

____Yes

____No

Thank you for taking the time to complete this questionnaire.

APPENDIX B

SURVEY OF FORMER DATA PROCESSING STUDENTS

DEARBORN PUBLIC SCHOOLS
4824 Lois Avenue
Dearborn, Michigan 48126

SURVEY OF FORMER DATA PROCESSING STUDENTS

(A follow-up study of students who participated in data processing classes.)

The Dearborn Public School System is interested in knowing what its former data processing students are doing and how well their data processing classes helped to prepare them for their job and/or advanced training.

Since your name will not be associated with your answers, it is not necessary for you to sign this questionnaire. Answers will be kept confidential; only the statistics of the study will be reported.

Thank you for your cooperation. Please return the completed form by March 1, 1971.

_____ Male____ Female____
Name of School Attended

_____ _____
Present Employer or School Address of Employer or School

1. What was (is) your academic average in school?

____A
____B
____C
____D

2. What college, university, or other schools have you attended since high school?

____None
____Community College
____Four-year College or University
____Armed Forces School
____Other, please specify _____

What was your area of specialization?

_____

3. Are you now enrolled in school?

_____Yes

_____No

4. Are you currently employed and attending school?

_____a. Work part-time

_____b. Work full-time

5. In regard to your data processing coursework, how well were you prepared for your first job?

_____Inadequately prepared

_____Satisfactorily prepared

_____Well prepared

6. If you are employed in an occupation other than electronic data processing, what is the value of your former data processing coursework in your employment?

_____No value

_____Some value

_____Great value

7. Are you interested in taking additional training in electronic data processing?

_____Yes

_____No

If yes, what kind of program would be most appealing to you?

_____Adult training programs

_____Intensive training (all day for one to six week periods)

_____Other _____

8. How did you secure your present job?

____Own efforts	____Private employment agencies
____Parents or relatives	____Other (please specify)
____Friends	_____
____School placement service	_____

9. What data processing coursework has the greatest value in your present job?

a._____

b._____

10. How well were you prepared in electronic data processing through your courework?

HIGH SCHOOL	WELL PREPARED	SATIS-FACTORILY PREPARED	UNSATIS-FACTORILY PREPARED	NO TRAINING
Accounting Machine	_____	_____	_____	_____
Collator	_____	_____	_____	_____
Interpreter	_____	_____	_____	_____
Reproducer	_____	_____	_____	_____
Sorter	_____	_____	_____	_____
Key Punch	_____	_____	_____	_____
Diagramming	_____	_____	_____	_____
Wiring Panels	_____	_____	_____	_____
Fundamentals of Data Processing	_____	_____	_____	_____

COMMUNITY COLLEGE	WELL PREPARED	SATIS-FACTORILY PREPARED	UNSATIS-FACTORILY PREPARED	NO TRAINING
Accounting Machine				
Collator				
Interpreter				
Reproducer				
Sorter				
Key Punch				
Flow Charting				
Computer Fundamentals				
Computer Operations				
Programming				
Systems Analysis and Design				

11. Do you feel more data processing courses should be made available in our schools?

____Yes

____No

If yes, please specify those courses you feel would be most needed.

a. _____

b. _____

c. _____

d. _____

12. Please include any remarks that you feel would help to make data processing instruction more beneficial to students.

a. _____

b. _____